

ASSIGNMENT 3

Textbook Assignment: "Link-11 Fault Isolation," chapter 3, page 3-7 through 3-22, "Link-4A," chapter 4, page 4-1 through page 4-10.

- 3-1. A multi-station POFA is considered successful when the computed receive error factor is less than what percentage?
1. 1
 2. 5
 3. 10
 4. 15
- 3-2. Which of the following buffers is acceptable to be received from an unrecognized station (UNREC STA) when a multi-station POFA is running?
1. One buffer of 200 words
 2. One buffer of 230 words
 3. Two buffers of 200 words
 4. Two buffers of 230 words
- 3-3. The heading PARITY STATUS OF CORRECT WORDS lists which of the following error conditions?
1. Words determined to be correct by the DTS parity check and found in error by the computer parity check
 2. Words determined to have an error and corrected by the DTS
 3. Words determined to be correct by both the DTS and the computer parity checks
 4. Words determined to be in error by the DTS parity check and found correct by the computer parity check
- 3-4. The LMS-11 is designed to perform which of the following functions?
1. Isolate problems to the component level in the Link-11 system
 2. Provide a history of Link-11 net performance
 3. Provide a real-time visual display of the Link-11 net operations
 4. Provide the technician with a visual display of the Link-11 operation of one unit
- 3-5. The LMS-11 is a complex system designed to be permanently installed.
1. True
 2. False
- 3-6. The DPG and CDG equipment cases of the LMS-11 provide isolation from which of the following environmental forces?
1. Shock only
 2. Vibration only
 3. Shock and vibration
 4. Power surges
- 3-7. The LMS-11 system printer is part of which of the following equipment groups?
1. Accessory
 2. Control/display
 3. Data processing
 4. Support

- 3-8. Which of the following components is NOT part of the LMS-11 data processing group?
1. Control processing unit
 2. Dual 5.25-inch disk drive unit
 3. Audio interface unit
 4. Power control unit
- 3-9. The HP9920U computer of the LMS-11 contains what additional amount of random access memory (RAM)?
1. 2 MB
 2. 4 MB
 3. 8 MB
 4. 12 MB
- 3-10. The data communications interface of the LMS-11 provides which of the following functions?
1. Parallel synchronous interface with the Link-11 data terminal
 2. Parallel asynchronous interface with the printer
 3. Serial synchronous interface with the Link-11 data terminal
 4. Serial asynchronous interface with the printer
- 3-11. The audio interface unit of the LMS-11 connects which of the following signals?
1. USB from HF radios only
 2. LSB from HF radios only
 3. USB from UHF radios only
 4. USB and LSB from HF radios and USB from UHF radios
- 3-12. To determine the phase shift of the Link-11 audio tones the LMS-11 uses which of the following methods?
1. Fast Fourier Transform formula
 2. Comparison of the raw analog signal with the preceding frame
 3. Phase shift signal from the DTS
 4. Digital data from the crypto device
- 3-13. The control/display group consists of which of the following units?
1. Composite video and color output circuit card assemblies
 2. Data communications interface and HP interface bus
 3. Color monitor and keyboard
 4. Color printer and interconnecting cables
- 3-14. The color display monitor of the LMS-11 uses composite video when it performs which of the following operations?
1. Normal LMS-11 operations
 2. Start-up operations only
 3. Testing operations only
 4. Both start-up and testing operations
- 3-15. The functional keys on the LMS-11 keyboard are color-coded to facilitate operator selections and entries.
1. True
 2. False
- 3-16. During initialization of the LMS-11, which of the following operator entries is NOT a required entry?
1. Date and time
 2. Own-ship PU number
 3. Net mode
 4. Data rate

- 3-17. When initializing the LMS-11, the operator enters 127 frames as the CALL-TIMEOUT value. What type of link-11 operation is indicated by this entry?
1. NET TEST
 2. Normal roll call mode
 3. Satellite link operation
 4. NET SYNC
- 3-18. The link monitor mode of the LMS-11 displays what information?
1. Quantitative information concerning the operation of a maximum of 21 PUs
 2. Detailed characteristics of the received signal from a specified PU
 3. Real-time link activity
 4. A graphic representation of the power levels of the received Link-11 tones from a single PU
- 3-19. Which of the following function keys on the LMS-11 keyboard would the operator depress to select the link monitor mode?
1. LM
 2. NET
 3. SPECT
 4. PU
- 3-20. A PU address of 77 is used by the LMS-11 to indicate which of the following units, if any?
1. PU 77
 2. NCS
 3. Task force flagship
 4. None, 77 is an illegal address
- 3-21. Which of the following colors indicates the preamble on the link monitor screen of the LMS-11?
1. Yellow
 2. Red
 3. Cyan
 4. Green
- 3-22. A small cyan line in the middle of the data field indicates the LMS-11 has detected which of the following signals?
1. Start code
 2. Stop code
 3. Phase-reference frame
 4. Noise
- 3-23. Which of the following displays is used to indicate the LMS-11 is listening?
1. A thick blue line
 2. A thin blue line
 3. A thick red line
 4. A thin red line
- 3-24. The phase-reference frame is displayed on the link monitor display in what manner?
1. As a small green line between the start code and the data
 2. As a small red line between the start code and the data
 3. As a small green line between the preamble and the start code
 4. As a small red line between the preamble and the start code
- 3-25. Data frames are represented on the link monitor display by which of the following colors?
1. Yellow
 2. Red
 3. Cyan
 4. Green
- IN ANSWERING QUESTIONS 3-21 THROUGH 3-25, REFER TO FIGURE 3-7 IN THE TEXT.

- 3-26. An NCS report can be easily identified on the link monitor display by which of the following features?
1. A two digit address at the end of a report only
 2. No call-up message between the end of the preceding report and the NCS report only
 3. Both a two digit address at the end of the report and no call up message between the preceding report and the NCS report
 4. A call message to the NCS address
- 3-27. An address shown in red on the XMT-ADDRS line of the status display indicates which of the following conditions?
1. The addressed unit is being interrogated
 2. The addressed unit failed to answer two interrogations
 3. The addressed unit has replied to an interrogation
 4. The unit indicated is the next address in the polling sequence
- 3-28. When the LMS-11 is operating in the link monitor mode and a phase reference frame is detected which, of the following status indicators is active?
1. CC1
 2. PHA
 3. PRE
 4. EOT
- 3-29. When the LMS-11 is operating in the link monitor mode and the first frame of a picket stop code is detected, which of the following status indicators is active?
1. CC1
 2. PHA
 3. PRE
 4. EOT
- 3-30. In the status box, the number in the %DATA indicates which of the following quantities?
1. The total percentage of data in the last message received
 2. The percentage of data that is error free in the last message received
 3. The total percentage of data received during the most recent net cycle
 4. The percentage of data that is error free received during the most recent net cycle
- 3-31. The net cycle time that is displayed in the LMS-11 status box indicates which of the following time cycles?
1. Start code to start code of NCS only
 2. Control stop to control stop of NCS only
 3. Control stop to control stop of an operator selected PU only
 4. Control stop to control stop from either NCS (default) or an operator selected PU
- 3-32. The Net Display mode of the LMS-11 is capable of displaying two separate types of information.
1. True
 2. False
- 3-33. In the summarize mode of the net display, a summary of quantitative information is displayed for a maximum of how many PUs?
1. 10
 2. 11
 3. 20
 4. 21

3-34. The net display mode can only be displayed when Link-11 is operating in which of the following modes?

1. Net test
2. Net sync
3. Roll call
4. Short broadcast

3-35. The PU field in the header of the Net Display screen of the LMS-11 is used to define which of the following units, if any, while in the summarize mode?

1. NCS
2. Own station PU number
3. The PU whose recurring transmission is used to define a cycle
4. None, the PU field is only used during the History mode

3-36. To change the Net Display screen from the summarize mode to the PU history mode, the operator would take which of the following actions?

1. Depress the history mode key on the keyboard
2. Enter a zero into the SUMMARIZE field of the Net Display header
3. Enter the PU number of the unit to be monitored in the PU field
4. Both 2 and 3 above

3-37. On the Net Display screen, which of the following values indicates an unacceptable SNR?

1. 5 dB
2. 15 dB
3. 25 dB
4. 34 dB

3-38. When the LMS-11 is in the Net Display (summarize) mode, which of the following conditions will cause the FRAME CNT value of a picket to be displayed in yellow and followed by a “?”?

1. The average number of frames per transmission exceeds seven
2. The average number of frames per transmission is six or less
3. The average signal to noise level per transmission exceeds 20 dB
4. The average signal to noise level per transmission is less than 20 dB

3-39. The %THRU column of the Net Display screen displays which of the following values?

1. The percentage of data received by the listed PU that is error-free
2. The percentage of message data frames received by the LMS-11 that contain errors
3. The percentage of message data frames received by the LMS-11 that are error-free
4. The percentage of control code frames received

3-40. Which of the following power levels listed in the REL 605 column of the Net Display screen indicates normal operation of the link?

1. -3 dB
2. -6 dB
3. +3 dB
4. +6 dB

- 3-41. Using TADIL A specifications, what is the maximum allowable variation of power in the Link-11 data tones?
1. 1.0 dB
 2. 1.5 dB
 3. 3.0 dB
 4. 4.0 dB
- 3-42. The PU display of the LMS-11 presents a graphic representation of the relative power and phase error of the Link-11 signal received from a specified unit.
1. True
 2. False
- 3-43. What information is displayed on the relative power bar graph of the PU display?
1. The power of the 605 Hz tone only
 2. The relative power of the data tones with respect to the 605 Hz tone
 3. The relative power of each data tone with respect to the average power of all the data tones
 4. The relative power of each data tone with respect to an internal standard
- 3-44. When the relative power bar graph is read, a data tone that is +2 dB greater than the average will be displayed in which of the following colors?
1. Cyan
 2. Green
 3. Yellow
 4. Red
- 3-45. The phase error bar graph of the LMS-11 display what information about the Link-11 signal?
1. Relative power
 2. Mean deviation of the phase error only
 3. Standard deviation of the phase error only
 4. Both the mean and standard deviations of the phase error
- 3-46. A standard phase deviation of 15 degrees for a data tone will be represented on the bar graph in which of the following colors?
1. Cyan
 2. Green
 3. Yellow
 4. Red
- 3-47. The LMS-11 will indicate that the data received is bad if the standard deviation falls in which of the following ranges?
1. A positive value less than 45 degrees
 2. A positive value greater than 45 degrees
 3. A negative value less than 45 degrees
 4. Both 2 and 3 above
- 3-48. The incidence of bit errors will increase as the signal-to-noise ratio increases.
1. True
 2. False

- 3-49. Which of the following tones are graphically displayed by the LMS-11 Spectrum Display?
1. 30 tones that are the odd harmonics of 55 Hz
 2. 30 tones that are the even harmonics of 55 Hz
 3. The 605 Hz tone and the noise tone only
 4. The 15 data tones only
- 3-50. Under ideal conditions, at what level should the data tones be displayed on the bar graph of the spectrum display?
1. 0 dB
 2. +6 dB
 3. -6 dB
 4. +4 dB
- 3-51. When the operator enters PU 00 into the PU address field of the spectrum display what effect, if any, will it have on the operation of the LMS-11?
1. 00 is an illegal address; therefore, no data will be displayed
 2. The LMS-11 will continuously update the display for each unit in the net
 3. The LMS-11 will update the display for NCS only
 4. No effect, the LMS-11 will continue to update the last legal address entered
- 3-52. Carrier suppression can only be tested when the Link-11 system is operating in which of the following modes?
1. Net Test
 2. Net Sync
 3. Roll call
 4. Broadcast
- 3-53. When reading the LMS-11 spectrum display, the technician notices that only the 605 Hz tone and the 2195 Hz tones are displayed. Which of the following setup entries would cause this display?
1. The RESTRICT field set to preamble only
 2. The RESTRICT field set to data only
 3. The PU field is set to a unit not in the net
 4. The SIDEBAND SELECT is set to USB only
- 3-54. Link-4A is what type of tactical digital information link?
1. Ship-to-aircraft
 2. Ship-to-submarine
 3. Ship-to-shore
 4. Ship-to-ship
- 3-55. Link-4A is used to transmit which of the following types of information?
1. High-speed computer-to-computer tactical information
 2. Tactical information from a CDS ship to a non-CDS ship
 3. Aircraft control and target information
 4. All of the above
- 3-56. Link-4A data is transmitted by using which of the following methods?
1. Frequency-shift keying
 2. Phase-shift keying
 3. Audio frequency tone shift
 4. Quadrature differential phase-shift keying

- 3-57. What is the maximum number of aircraft that can be controlled by a single Link-4A controlling station?
1. 25
 2. 50
 3. 75
 4. 100
- 3-58. Aircraft control messages from the Link-4A controlling station are developed by the CDS computer using which of the following types of information?
1. Radar-derived target data
 2. Reply data from aircraft
 3. Other sources of tactical information
 4. All of the above
- 3-59. Link-4A uses which of the following frequency bands for data exchange?
1. HF only
 2. UHF only
 3. VHF only
 4. Both UHF and VHF
- 3-60. In which of the following Link-4A modes of operation is an aircraft directed to a specific location to be at an optimum position for an attack?
1. Precision course direction
 2. Automatic carrier landing system
 3. Air traffic control
 4. Intercept vectoring
- 3-61. In which of the following Link-4A modes of operation is used to maintain safe flight patterns and assigns priority for landing approach?
1. Precision course direction
 2. Automatic carrier landing system
 3. Air traffic control
 4. Intercept vectoring
- 3-62. Which of the following Link-4A modes of operation is used for the remote guidance of bombers, reconnaissance aircraft, and drones?
1. Precision course direction
 2. Automatic carrier landing system
 3. Air traffic control
 4. Intercept vectoring
- 3-63. In which of the following Link-4A modes of operation is used to land an aircraft on the flight deck of a carrier?
1. Precision course direction
 2. Automatic carrier landing system
 3. Air traffic control
 4. Intercept vectoring
- 3-64. The CAINS aircraft alignment data loaded into the navigation computer of the aircraft consists of which of the following types of data?
1. The latitude and longitude of the ship only
 2. The ship's velocity only
 3. The latitude, longitude, and ship's velocity
 4. The waypoint data
- 3-65. The CAINS alignment and waypoint data is initially loaded into the aircraft using which of the following methods?
1. Hard-wired deck edge outlet boxes only
 2. UHF RF transmission only
 3. Either hard-wired deck edge outlet boxes or UHF RF transmission
 4. HF transmission only

3-66. The standard CDS control message is _____(a)_____ milliseconds in duration, while the reply message is _____(b)_____ milliseconds in duration.

1. (a) 2 (b) 14
2. (a) 2 (b) 18
3. (a) 14 (b) 14
4. (a) 14 (b) 18

3-67. The CAINS receive cycle duration is equal to what total number of milliseconds?

1. 2
2. 4
3. 14
4. 18

3-68. The transmit frame is divided into what total number of 200 μ sec time slots?

1. 13
2. 56
3. 70
4. 200

3-69. What total number of time slots make up the sync preamble of each transmit frame?

1. 13
2. 42
3. 56
4. 70

3-70. What total number of transmit frame time slots contain message data bits?

1. 8
2. 13
3. 56
4. 70

3-71. Which of the following transit frame signals causes the transmitter to turn off and starts the receive cycle?

1. Stop pulse
2. Sync burst
3. Guard interval
4. Transmitter un-key

3-72. The reply message contains what total number of data time slots?

1. 13
2. 42
3. 56
4. 70

3-73. Which of the following Link-4A test messages is used to provide aircraft with the means to verify proper operation of Link-4A?

1. The monitor reply message
2. The monitor control message
3. The universal test message
4. All of the above

3-74. Which of the following Link-4A test messages causes internal testing of the data terminal set?

1. The monitor reply message
2. The monitor control message
3. The universal message
4. All of the above

3-75. Which of the following AN/SSW-1() subassemblies provides system timing for Link-4A operations?

1. Digital-to-digital converter
2. Monitor test panel
3. Coordinate data transfer control
4. Pulse amplifiers